

CLAIMS

We claim:

1. A method of assembling a drive axle assembly of a tandem axle assembly, comprising the steps of:

- 5 providing a differential carrier housing having a forward opening and a rear opening ;
inserting a first gear into said carrier housing through said rear opening;
inserting a pinion shaft into said carrier housing through said rear opening, said
pinion shaft being rotatably coupled to said first gear;
inserting a second gear into said carrier housing through said rear opening;
10 inserting a power divider subassembly having a plurality of differential gears into said
carrier housing through said rear opening, said second gear placed in mesh with said plurality
of differential gears on a rearward side of said power divider subassembly; and
inserting a third gear into said carrier housing through said rear opening, said third
gear placed in mesh with said plurality of differential gears on a forward side of said power
15 divider subassembly.

2. The method of claim 1 wherein said providing step further includes providing a one-piece differential carrier housing.

3. The method of claim 1 wherein said step of inserting a first gear further includes the substep of locating said first gear between forward and rear pinion bearing support structures defined in said carrier housing.

4. The method of claim 1 wherein said step of inserting a pinion shaft further includes the substeps of:

- coupling said pinion shaft to a pinion gear prior to inserting said pinion shaft into said
5 carrier housing; and
inserting said pinion shaft through said first gear.

5. The method of claim 1 further comprising the steps of:
inserting a differential lock clutch member into said carrier housing through said rear
opening; and
inserting a shift fork subassembly into said carrier housing through said rear opening.

6. The method of claim 1 further comprising the step of inserting an input shaft into said carrier housing through said forward opening.

7. The method of claim 1 wherein said step of inserting a pinion shaft occurs after said step of inserting a first gear.

8. The method of claim 1 wherein said step of inserting a second gear occurs after said step of inserting a pinion shaft.

9. The method of claim 1 wherein said step of inserting a power divider subassembly occurs after said step of inserting a second gear.

10. The method of claim 1 wherein said step of inserting a third gear occurs after said step of inserting a power divider subassembly.

11. A method of assembling a drive axle assembly of a tandem axle assembly, comprising the steps of:

providing a differential carrier housing having a forward opening and a rear opening ;

inserting a first gear into said carrier housing through said rear opening;

5 inserting said pinion shaft into said carrier housing through said rear opening and through said first gear, said pinion shaft being rotatably coupled to said first gear;

inserting a second gear into said carrier housing through said rear opening;

10 inserting a power divider subassembly having a plurality of differential gears into said carrier housing through said rear opening, said second gear placed in mesh with said plurality of differential gears on a rearward side of said power divider subassembly;

inserting a third gear into said carrier housing through said rear opening, said third gear placed in mesh with said plurality of differential gears on a forward side of said power divider assembly;

15 inserting a differential lock clutch member into said carrier housing through said rear opening; and

inserting a shift fork subassembly into said carrier housing through said rear opening.

12. The method of claim 11 wherein said providing step further includes providing a one-piece differential carrier housing.

13. The method of claim 11 wherein said step of inserting a first gear further includes the substep of locating said first gear between forward and rear pinion bearing support structures defined in said carrier housing.

14. The method of claim 11 wherein said step of inserting said pinion shaft further includes the substep of coupling said pinion shaft to a pinion gear prior to inserting said pinion shaft into said carrier housing.

15. The method of claim 11 further comprising the step of inserting an input shaft into said carrier housing through said forward opening.

16. A method of assembling a drive axle assembly of a tandem axle assembly, comprising the steps of:

providing a differential carrier housing having a forward opening and a rear opening;
inserting, after said providing step, a first gear into said carrier housing through said

5 rear opening;

inserting, after said step of inserting a first gear, a pinion shaft into said carrier housing through said rear opening, said pinion shaft being rotatably coupled to said first gear
inserting, after said step of inserting a pinion shaft, a second gear into said carrier housing through said rear opening;

10 inserting, after said step of inserting a second gear, a power divider subassembly having a plurality of differential gears into said carrier housing through said rear opening, said second gear placed in mesh with said plurality of differential gears on a rearward side of said power divider subassembly; and

15 inserting, after said step of inserting a power divider subassembly, a third gear into said carrier housing through said rear opening, said third gear placed in mesh with said plurality of differential gears on a forward side of said power divider subassembly.

17. The method of claim 16 wherein said providing step further includes providing a one-piece differential carrier housing.

18. The method of claim 16 wherein said step of inserting a first gear further includes the substep of locating said first gear between forward and rear pinion bearing support structures defined in said carrier housing.

19. The method of claim 16 further comprising the steps of:
inserting a differential lock clutch member into said carrier housing through said rear opening; and
inserting a shift fork subassembly into said carrier housing through said rear opening.

20. The method of claim 16 further comprising the step of inserting an input shaft into said carrier housing through said forward opening.

21. A differential carrier housing, comprising:
a body having a first forward opening at a forward end of said body and a rear opening at a rearward end of said body, said body configured to receive an input shaft, a power divider subassembly, and a pinion shaft subassembly;
5 a radially extending flange extending from said body proximate said rearward end of said body and configured for connection to an axle housing; and
wherein said rear opening is configured to allow insertion of said power divider subassembly and said pinion shaft subassembly into said body and said first forward opening is configured to allow insertion of said input shaft and a bearing cone disposed about said
10 input shaft, said first forward opening having a diameter about equal to one of a diameter of said bearing cone and a diameter of a bearing adjuster.

22. The differential carrier housing of claim 21 wherein said body includes a second forward opening configured to allow insertion of bearings supporting one end of a pinion shaft of said pinion shaft subassembly, said second forward opening having a diameter about equal to a diameter of a bearing cup of said bearings.

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23. The differential carrier housing of claim 22 wherein said body is configured to receive a differential clutch and said body includes a third forward opening configured to allow insertion of a piston associated with said differential clutch, said third forward opening having a diameter about equal to a diameter of said piston.